



Refugee Health Update: Lead Exposure in Refugee Children

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Although there have been dramatic reductions in blood lead levels (BLLs) among children in the United States and Rhode Island in recent years, childhood lead poisoning remains a significant public health concern. In Rhode Island, among children entering kindergarten in the fall of 2006, 8% had been found to have elevated BLLs at some time prior to age three.¹ Among children living in the state's core cities (Central Falls, Newport, Pawtucket, Providence, West Warwick, and Woonsocket), the prevalence rate was 13% of children.¹

Over the last decade, an average of 70,000 refugees per year have resettled in the US, with the proportion of children ranging between 30% and 40%. During a recent 21-month period, the majority of the 352 refugees arriving in Rhode Island came from Sub-Saharan Africa, most notably Liberia, Ivory Coast, Ethiopia, and Somalia.² Large proportions of children arriving from those countries have been afflicted by iron deficiency and chronic and acute malnutrition that put them at high risk for lead poisoning. Accordingly, the refugee health screening in Rhode Island, which is required for all refugees within 30 days of arrival, includes a BLL test among children up to age 6.³ Children with a BLL test result of 10 µg/dL or greater are classified as having elevated blood lead levels, and children who have a single venous BLL test result of 20 µg/dL or greater or two tests (capillary or venous) occurring at least 90 days apart but no more than 365 days apart with levels of 15 µg/dL or greater are classified as "significantly lead poisoned."¹ For children in the latter category, the Department of Health offers a home inspection by certified lead inspectors to determine whether lead hazards are present and to work with property owners to mitigate any hazards identified.

EPIDEMIOLOGICAL FINDINGS IN NEW ENGLAND STATES

Several studies in New England states show the prevalence of lead poisoning and associated risk factors among refugee children. Among Somali-Bantu children ages 0-14 years arriving in Massachusetts between April 2003 and September 2005, 182 of 290 (63%) were found to be anemic. Among those under age 12, 21% (33 of 157) had elevated BLLs, with 6 of those (4%) having levels of 20 µg/dL or greater. More recently (April 2005-March 2006), among arrivals from all African nations, 26 of 193 (14%) of children were found to have elevated BLLs, with especially high prevalence rates among Somali (28%) and Liberian (28%) children.⁴

Another study, conducted by the New Hampshire Department of Health and Human Services, examined BLL test results for 242 refugee children (ages 6 months – 15 years) arriving in the state during the period October 2003-September 2004, primarily from Africa (238) and primarily resettling in

the city of Manchester (216). Of the 242 children, 210 were tested for blood lead within 90 days of their arrival and 92 of them were tested again between 3 and 6 months after their initial test.⁵ Among the children who were tested twice, 11% had elevated BLLs at the time of initial screening only, 14% had elevated levels at both initial and follow-up screening, 29% had elevated levels at the follow-up screening only, and 46% had no findings of elevated blood lead. Thus, many children had elevated BLLs when they arrived in the US, presumably from exposures in their home countries, and an even greater number were found to have acquired elevated levels from exposures after their arrival here.

Although data on BLLs specific to refugees arriving in Rhode Island are not available, the results from Massachusetts and New Hampshire can be presumed to extend to them, as there is substantial overlap in the countries of origin. Many of these children will arrive with elevated BLLs, and many more will arrive with risk factors for acquiring elevated levels.

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) RECOMMENDATIONS

The CDC has developed recommendations for testing, treating, and preventing lead poisoning among refugee children:⁶

- Identification of Children with Elevated Blood Lead Levels
 - Blood lead level testing of all refugee children 6 months to 16 years old at entry to the US.
 - Repeat blood lead level testing of all refugee children 6 months to 6 years old (and older children, if warranted) 3 to 6 months after refugee children are placed in permanent residences, regardless of initial test results.
- Early Post-arrival Evaluation and Therapy
 - Upon US arrival, all refugee children should have nutritional evaluations performed, and should be provided with appropriate nutritional and vitamin supplements as indicated.
 - Evaluate the value of iron supplementation among refugee children.
- Health Education / Outreach
 - CDC and its state and local partners should develop health education and outreach activities that are culturally appropriate and sensitive to the target population.
 - CDC and its state and local partners should develop training and education modules for health care providers, refugee and resettlement case workers, and partner agencies (e.g., WIC) on the following:
 - Effects of lead poisoning among children.
 - Lead sources in children's environments and ways to reduce the risk of exposure.

- Nutritional and developmental interventions that can mitigate the effects of lead exposure.
- Ways to provide comprehensive services to children with elevated blood lead levels.

A NEW RESEARCH STUDY

Under the leadership of Paul Geltman, MD, MPH, of the Massachusetts Department of Public Health, a retrospective cohort study to examine the relationship between BLL, behavioral practices, and world region of origin in refugee children has been developed.⁷ This study addresses the relative lack of data on the subject during the past five years, a period when the demographics of the refugee population entering the United States have been changing.

This research is designed to contribute to the overarching goal of describing the distribution of lead exposure in refugee children resettled throughout the US. There will be a focus on refugees from Africa, who have accounted for a large proportion of incoming refugees in recent years, as well as on identifying the cultural and behavioral practices that can influence the risk of lead exposure. Participating states and localities will be asked to identify a sample of 30 refugees from their jurisdictions to be included in the study so that it will represent the situation of refugee children nationally.

CONCLUSION

In Rhode Island, the Refugee Health and the Childhood Lead Poisoning Prevention Programs have put in place a system to ensure that refugees are screened for lead upon their arrival to the United States. Some refugees have already been exposed to lead sources in their own countries, but some others are potentially exposed to lead once they are here. While lead screening is a test that verifies the presence of lead in a child's blood stream, what is really important is to eliminate the sources that cause lead poisoning in young children. The key is to conduct primary prevention, so no child is exposed to lead and its deleterious effects. Strategies to permanently remove lead hazards from homes and provide healthy housing to families, along with resources to implement them, must be put in place and be continuously supported.

For additional information on lead and lead poisoning, visit the Rhode Island Department of Health's web site, www.health.ri.gov/lead.

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Disclosure of Financial Interests

The authors have no financial interests to disclose.

